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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO..
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10/629,586

07/30/2003

Tomonori Imamura

116629

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25944

7590

11/28/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

CANTELMO, GREGG

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

Office Action Summary	Application No. 10/629,586	Applicant(s) IMAMURA ET AL.	
	Examiner Gregg Cantelmo	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006 and 19 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-17 and 20-22 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16,17,20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1 3-15 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 19, 2006 has been entered.

Response to Amendment

2. In response to the amendment received October 19, 2006:
- a. Claims 1, 3-17 and 20-22 are pending;
 - b. The prior art rejection of JP '065 stands.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim recites that the hydrogen that is exhausted from the cell is not electrochemically reacted with said oxygen. This is not

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particularly accurate since the system is provided with a recycle line which returns any unreacted fuel back to the fuel cell itself and thus by improving the fuel efficiency of the system, the exhausted hydrogen is in fact electrochemically reacted with oxygen.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites that the hydrogen that is exhausted from the cell is not electrochemically reacted with said oxygen. This is not particularly accurate since the system is provided with a recycle line which returns any unreacted fuel back to the fuel cell itself and thus by improving the fuel efficiency of the system, the exhausted hydrogen is in fact electrochemically reacted with oxygen. It then becomes unclear as to how the recycle line of the claim, which appears to reintroduce fuel back into the fuel line, does so without having the exhausted fuel react with oxygen. Clarification is respectfully requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 6-15 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2002-164065 (JP '065).

JP '065 discloses a fuel cell and a fuel cell control system comprising: measuring the output voltages of the fuel cell stack and diagnosing the humidity level in the electrolyte membrane relative to the voltage measured (Prior art claims as applied to claim 1). The statistics include average and standard deviation of the voltage (as applied to claim 1).

The moisture level of the electrolyte is monitored as discussed above with a vibrating component shown in Fig. 5 and the average of the vibrating components being a smooth curve (as applied to claims 4 and 8-10).

The output voltages are traced in time (Figs. 4 and 5 as applied to claim 6).

In calculating the average, standard deviation, maximum and minimum voltages for the cells, the results provide both a non-vibrating component represented by the average voltage and a vibrating component from the standard deviation and/or the maximum and minimum voltages (as applied to claim 7).

The fuel cell further includes thermometry means for measuring the temperatures of the fuel cells. The system monitors both voltage characteristics and temperature characteristics, all of which are provided to a processor for storage and diagnosis. The means of JP '065 is held to be structurally capable of performing the same functional diagnosing steps as recite in claims 11-15.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art

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structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

The system further includes a fuel introduction line through which said hydrogen is supplied into said fuel cell stack and a fuel exhaust line through which said hydrogen is exhausted, wherein said hydrogen that is exhausted is not electrochemically reacted with said oxygen wherein said fuel exhaust line is joined to the fuel introduction line. This recycling is performed via the return line defined by pump 5 in Figs. 1, 2 and 8 (as applied to claim 22).

Response to Arguments

5. Applicant's arguments filed October 19, 2006 have been fully considered but they are not persuasive.

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Applicant still fails to reason how the claimed invention differs structurally from the fuel cell system of JP '065.

It is held that the apparatus of JP '065 which monitors the voltage of the stack and increases or decreases the water into the stack has all of the requisite claimed structure as recited in claim 1 and thus capable of performing the same functions.

Even if the apparatus of JP '065 were to perform different monitoring from that of the claimed invention, the claimed invention is to the apparatus itself and since JP '065 has the same apparatus structure as that of claims 1, 4, and 6-15. Thus it is unclear how the control system of JP '065 is incapable of functioning in any number of ways including those functions of claim 1 and there is an absence of any such evidence in the record.

Once more: while intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '065 in view of JP 2003-178789 (JP '789).

The teachings of JP '065 have been discussed above and are incorporated herein.

The differences between claims 3 and 5 are that JP '065 does not teach of diagnosing means diagnoses that the hydrogen electrode is blocked by water, if said average voltage is within a prescribed range and moreover at least one of said measured output voltages is not within a prescribed range (claim 3) or wherein said diagnosing means diagnoses that the hydrogen supply is insufficient, if said average voltage is not within a prescribed range and moreover said standard deviation is not within a prescribed range (claim 5).

JP '065 discloses monitoring the voltage characteristics of a fuel cell and adjusting parameters to the fuel cell in response to variances in the voltage characteristics.

JP '789 teaches of monitoring the voltage of a fuel cell stack and diagnosing the voltage to determine whether or not the fuel electrode is clogged with water (abstract).

In performing the monitoring of JP '789 upon recognition that a voltage is not within a prescribed range, the system recognizes that the hydrogen electrode is blocked

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by excess water and thus recognizes that the hydrogen supply is insufficient and thus that the pressure at the hydrogen electrode is insufficient.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '065 by further including a means for monitoring the voltage to determine whether or not the fuel electrode is clogged with water since it would have permitted response to the blockage so that the operation of the fuel cell can be improved by unclogging the blocked electrode.

Allowable Subject Matter

7. Claims 16, 17, 20 and 21 are allowed for reasons set forth in the previous office action.

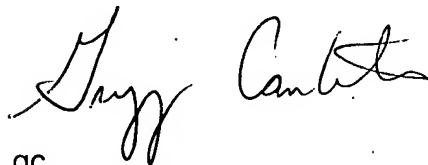
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gc

November 21, 2006

Gregg Cantelmo
Primary Examiner
Art Unit 1745